Early Evidence of Welfare Changes in the Kyrgyz Republic: Have Things Got Worse with Reforms?*

by

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Abstract

The early 1990s saw the rapid introduction of policies that were to reform the centrally planned economies in CEE and FSU. These policies were expected to lead to improvements in welfare. Studies on the transition projected initial falls in inequality and increases in poverty, which are confirmed here. This paper examines to what extent effects to overall welfare can be discerned from the data in a highly rural economy in a Republic in the FSU. The analysis uses Kyrgyz household survey data for 1993 and 1996.

Keywords: transition; enterprise production; labour demand.
JEL Classification Nos.: C13, D63

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1 Introduction

Kyrgyzstan became an independent state in August 1991. In common with other ex-Soviet republics the Republic embarked on a transition path away from a command economy and pursued what was claimed to be a rapid programme of reform (E.B.R.D. (1995)). Since the beginning of the 1990s the economic and political reforms taking place in the Kyrgyz Republic have resulted in a relatively protracted recession that has had a severe impact on livelihoods. Households had to cope with price liberalization of basic staple goods, contraction in the labour market and falling real wages and incomes, when wages and benefits were actually received, and inflation levels that peaked at triple digits by 1993. Despite these outcomes the reforms are expected to lead eventually to a marked rise in national incomes and improvements in living standards though it is not known how long this will take given the extent of the recession.

The aim of this paper is to provide an indication of the extent of the recovery in living standards over the period 1993-1996. Although inequality and poverty indices from other studies are consistent with findings in this paper, namely that inequality has fallen slightly while poverty has increased over the period 1993 to 1996, this analysis is a much more detailed comparison of welfare over 1993 and 1996 and provides a better understanding of the magnitude of the impact of the reform process on the population over this period. This paper provides a picture of the extent of the upheavals caused by the reform process to the welfare of the Kyrgyz population and assesses whether it can be concluded that there have been improvements in welfare over the transitional period 1993-1996.

There is evidence from a range of studies, see U.N.D.P. (1999), Falkingham et al. (1996), Cox, Jimenez, and Jordan (1995), E.B.R.D. (1995), Ko Styukova (1994), Howell (1994) and Dabrowski et al. (1995), that the greatest shocks to the economy occurred in the earlier years of reform. Other studies have focussed on inequality and poverty comparisons across countries, see U.N.D.P. (1999), Flemming and Micklewright (1999), Milanovic (1998), Atkinson and Micklewright (1992) and World Bank (2000). Milanovic (1998) presents a comprehensive study comparing inequality and poverty rates across countries of the FSU and CEE, often using income data from the FBS for the late 1980s and comparing with more recent data when available. In general republics of the CEE have lower income inequality and lower poverty rates compared to the FSU. Other national

reports, such as that by the Kyrgyz Ministry of Labour and Social Protection, M.L.S.P. (1998) and Mudahar (1998), detail the existing problems and how poverty has exacerbated as a result of the reforms. Recent studies focusing on the Kyrgyz Republic have looked at the incidence of poverty at single points in time, such as Ackland and Falkingham (1996) and World Bank (1995) for the Fall of 1993, World Bank (1997) for Spring 1996 and NatKomStat (1997) for Fall 1996. Milanovic (1998) compares 1987/8 and 1993 figures. As well as the incidence of poverty there have been several studies looking at the correlates of poverty, such as Ackland and Falkingham (1996) who use probit analysis applied to Fall 1993 data, and Anderson and Pomfret (1999) who use a quantile regression approach comparing Fall 1993 and 1996. Ackland and Falkingham (1996) find some gender bias to poverty using the 1993 data, with female headed households in urban areas having a higher incidence of poverty. They found little evidence of the number of children making a difference to poverty incidences. The results in Anderson and Pomfret (1999) differ slightly and the authors find that the cost of children has increased, hence making families with children more likely to be in poverty compared to 1993. They also found that the south seems to be worse off than the north and household heads with post-secondary school training appear to be doing better. Anderson and Pomfret (1999) claim that poverty has stabilized over the period 1993 and 1996 while the determinants of poverty have changed. Here, on the contrary, it is argued that since there has been only a gradual improvement in the economy, with substantial changes to employment and unemployment occurring over this period, the determinants of poverty are unlikely to have altered greatly. Hence the focus in this paper is on the extent of the changes in welfare over this period.

The paper is structured as follows; the first section provides an overview of the effects of the reforms that were introduced. In the next section a background to inequality and poverty since the Soviet period is provided to give a context for the findings in the Kyrgyz Republic. The methodological approach used for this analysis is then described, followed by a description of the data used in the empirical analysis. The findings for welfare are then presented for 1993 and 1996, ending with a conclusion of these results.

2 Overview of the affects of reforms on welfare

The Kyrgyz Republic is a small land-locked mountainous country of approximately 4.6m people. The Republic is one of the poorest and less developed out of the five Republics in Central Asia. Unlike Russia, little is known about the affects of reform in Central Asia and this paper aims to provide an understanding of the process of reform in a highly rural economy such as the Kyrgyz Republic. The relative success of the implementation of these reforms is noted elsewhere, see E.B.R.D. (1997), E.B.R.D. (1998) and Jermakowicz and Pankow (1994), but in general the Kyrgyz Republic did not fare particularly badly in terms of effectiveness compared to other countries going through similar changes.

The affects of the breakup of the Soviet Union on the Kyrgyz Republic included the loss of an integrated trading market and cross-country subsidies, particularly from Moscow (transfers from Moscow accounted for as much as 10% of GDP till 1991, see The World Bank (1993)), and the collapse of a highly specialized integrated production system that spanned Republics within the Union (see Rumer (1989) and Rutkowski (1996)). The Kyrgyz Republic with no natural resources, and hence with little obvious economic potential for growth, separated from a union that permitted it an economic and political viability that would appear to be difficult for it to sustain on its own (see Slem (1997) for the economic implications of the break-up of the Soviet Union into 15 independent Sates).

In fact by the mid-1990s the Kyrgyz Republic had one of the more favourable investment climates in the region. The country had a stable currency, the Som, introduced in May 1993, and a stock exchange, the only privately-owned one in the region. Foreign investment was still relatively limited, though notable among these were joint ventures with firms established in the early 1990s to explore and develop newly found gold reserves at the Kumtor mine, around Lake Issy-Kul. Price liberalization took place in two stages, in April 1991 and in January 1992, where price controls were removed on all goods except a limited list of items. Inflation peaked at 1,363% in 1993, gradually stabilizing to around 35% in 1996. The Kyrgyz Republic experienced falls in GDP of 20% with only positive rates of growth emerging in late 1995, see Table 1.

Reduction in Government expenditure also meant that the relatively generous social assistance system that was a feature of many Soviet economies has been greatly reduced.

Table 1: Economic Indicators 1992-1997

	1992	1993	1994	1995	1996	1997
Output, percentage change						
GDP constant prices	−19.0	−16.0	−20.0	−5.4	7.1	9.9
Industrial gross output	−26.4	−25.3	−23.5	−36.9	3.9	39.7
Agricultural gross output	−5.0	−10.0	−15.0	4.0	0.9	3.0
Gross average monthly wages in Soms (annual average)						
Nominal wages*	11.5	83.8	233.4	368.2	490.9	680.2
Real wages*	10.4	83.4	71.0	73.5	75.1	82.9
Percentage Change (based on end year)						
Consumer Prices	1,259	1,363	95.7	32.3	34.9	14.7
Producer Prices	*na*	224.6	96.7	17.0	23.0	26.0
Soms per US dollar (annual average)						
Exchange rate	226.2	6.1	10.8	10.8	12.8	17.4

*Source: EBRD (2000), *E.B.R.D. (1998) and E.B.R.D. (1997)*

The high inflation withered the value of benefits such as pensions and child benefits. Many other areas were affected by reductions in Government expenditure, in particular health and education. Medical services and schooling that was relatively free before reform became subjected to fees and unofficial charges.

During the early years of reform arrears in both wages and benefit payment were high. Even when paid, wages and other kinds of income received by the majority of the population were not sufficient to satisfy minimum basic needs, see M.L.S.P. (1998). Real wages fell by over half in 1992 due to inflation levels and their average level is lower than that of the minimum consumer budget, see Table 2.

The reduction in the Government budget meant a change from the array of universal benefits households could claim and means-testing was used to allocate the limited funds, see Neubourg and Morris (1999). Means-tested benefits were also low and paid to low income families up to the rate of the minimum wage per family member and were insufficient to prevent people falling into poverty. This was compounded with problems of

Table 2: Falls in Real Incomes, 1992-1996

	1992	1993	1994	1995	1996
Fall in Income since 1991*	60%	8.2%	21.8%	11.3%	1.8%

* minus taxes and compulsory payments

Source: Kyrgyz Republic Social Policy 1998, M.L.S.P. (1998)

delays in payment and poor targeting of eligible households. However by the mid 1990s, the Government was making attempts to target more effectively its limited budget.

In particular, the economic crisis had a severe impact on agricultural production and the economy of villages. The agrarian sector was deprived of State subsidies and preferential credits. Peasant farms faced sharp increases in the price for equipment, fertilizers, electric power carriers and the sale of their own products. In some parts of the country, farmers' wages had not been paid for some years, see Mudahar (1998).

There was further commercialization of education, public health, housing and communal services. The effect of higher costs of education led to a significant proportion of the population excluded from acquiring knowledge and hence from entering certain professions.

Several national strategies were implemented from the late 1996 onwards, in order to address the growing incidence of poverty. These were included in the National Strategy of Development, which was designed to run till 2005; Indicative Plan of the socio-economic development 1996-1998, National Strategy of sustainable Human Development till 2015 main aim intended to reduce poverty by 10%, see Kaiser et al. (1996). Against this background of reform the affects of the restructuring process are examined for the Kyrgyz Republic over the transitional period 1993-1996.

3 Background to Soviet Inequality and Poverty

Here we provide a context for the importance of inequality and poverty concepts in the FSU.

Although it was assumed by many that prior to reform Communist countries would enjoy more egalitarian distributions of income than market economies, there were in fact no

ideological foundations for such objectives. According to Marx's principles of distribution there were two successive stages of development; socialism and then communism. Once problems of production were solved and incentive issues were no longer a hindrance, under communism individuals were to be rewarded according to need. However, until obstacles of production were resolved under socialism individuals' would be rewarded largely according to their contribution. Although known as Communist countries principles of socialism were followed with the true form of communism rarely ever being attained. The main feature of socialist countries was the ownership of the means of production by the State. Although there was a variety of forms of ownership, for example social ownership or collective ownership amongst others, the role of the State was of foremost importance. Not only was the State a major employer but through the places of work individuals received health and education facilities, pensions and other social benefits.

For those outside of the labour market, socialist economies did not provide social assistance programmes. The use of enterprises to provide social protection meant that those who were only weakly (or less than weakly) connected with the labour market often fell through the safety net. Some sort of substitute safety net was often provided by family, friends and neighbours. Shlapentokh (1989) claimed that around two-thirds of working parents in the Soviet Union and more than a quarter of Soviet households regularly borrowed money from each other. The regularity and extent of these transactions also reflect the absence of commercial credit institutions from whom loans could be obtained. Private or 'inter-household' transfers can significantly change consumption possibilities, as has been shown in Townsend (1994), where effects of 'inter-household' transfers on household consumption in India were examined. Interestingly, there is little evidence in the literature of the presences of private commercial money lenders or pawnbrokers in Central Asia. McAuley and Coudouel (1996) note that both cultural (for example, the strong clan loyalties) and religious (Islam emphasizes the desirability of alms-giving and family solidarity) factors in society in the Kyrgyz Republic and Central Asia in general make the study of private transfers particularly interesting and given the inherited Soviet structure, strengthens the expectations about the importance of private transfers. It is anticipated that these informal coping strategies are likely to become more significant during the early stages of transition. McAuley and Coudouel (1996) have examined whether the in-

troduction of public schemes 'crowd out' private provision in Central Asia. Households previously supplying private transfers to the less well-off may cut back on their supply leading to little net increase in the incomes of the poor. This is unlikely to have happened by the mid-1990s. There is evidence from preliminary analysis of the data that such transfers are prevalent, though evidence has suggested that at certain times, e.g. high inflation periods, such transfers were reduced. The assessment of such 'gifts' is also problematic when they are in the form of non-monetary 'gifts', e.g. agricultural produce or durables, since they need to be valued for comparison purposes. Earlier studies have however found that private transfers have been large and widespread during the transition over the period 1994-1996 in Russia. Contributions of private transfers to household income were found to be on average 8% of total income, see Cox, Eser, and Jimenez (1997). In fact, in cultures with the extended family structure, such as in Central Asian Republics, transfers are likely to be more intra-household rather than inter-household transfers, making it even more difficult to distinguish such transfers for accounting purposes. Such transfers as well as improving living standards may reduce inequality, particularly for households at the lower end of the distribution who are likely to be the recipients of transfers.

Despite equality of outcome not being the main objective, the consequence of the abolition of private ownership of production did in fact do much to reduce inequality. In addition interventions by Central Planners in setting wages and prices in order to limit large wage dispersions, particularly in the USSR, led to lower inequality in the earnings distribution. As a result in general the income distribution was found to be relatively more egalitarian in socialist countries than non-socialist countries partly due to the non-monetary fringe benefits and the greater amount of social transfers, detailed below. With the movement away from socialism to a market economy the ex-socialist countries are expected to converge to the level of market economies.

Prior to the reform, household survey data in many of the socialist countries took the form of Family Budget Surveys (FBS), which began in the 1870s. The lack of availability of the data for former socialist countries had resulted in limited empirical studies being carried out. When data were available, there were often problems of reliability and even more so comparability with non-socialist countries. The FBS focussed on the working population and excluded vulnerable groups of the population in particular the unemployed or

pensioners, see Atkinson and Micklewright (1992) and Milanovic (1998) for comments on comparability and problems with the survey data. Recently implemented measurement tools in the form of nationally representative household surveys, such as the Living Standard Measurement survey introduced by the World Bank in many of these countries, have facilitated much empirical analysis subsequent to reform including this thesis. However, even with LSMS data, the widespread use of non-monetary fringe benefits, subsidies and in-kind payments in ex-socialist countries can make comparisons with market economies problematic.

3.1 Inequality in the Former Soviet Union

Studies show that in the 1950's there were large regional disparities in the distribution of income within the Soviet Union and this persisted in the 1960's and 1970', see Lydall (1968), Pryor (1973) and Wiles (1974)[1]. The USSR was found to be more unequal that Hungary, though less unequal than the USA and Western Europe in general. Other studies support the view that the distribution of earnings was significantly less unequal in the Communist countries of Eastern Europe than in comparable Western countries, see Lydall (1979), Chapman (1979) and Bergson (1984). By the 1980s, studies comparing Western and Soviet economies found little systematic difference on overall dispersion of earnings. Results from Atkinson and Micklewright (1992) (pg. 80 their reference) confirm that little had changed by the mid 1980s with the Soviet Union having distinctly greater dispersion in their earning distribution with the ratio of top and bottom decile for USSR reaching 3.3, higher than for the Czechoslovakia, Hungary or Poland.

Inequality within the USSR had increased over the 1980s, despite showing a marked reduction over the late 1990s, see Redor (1986) (using a translation of the main findings) and McAuley (1991). There was, and is, a significant disparity in the size of the Republics of the FSU. In 1989 Russia represented 55% of employed in the USSR. Average earnings varied as a percentage of those in Russia, from 69% in Azerbaidzhan and 73% in Moldova to 104% Estonia. Over time there has been a distinct rise in average earnings relative to

[1]Labour income was found to represent a much larger proportion of total household income in the FSU than in CEE Republics - over 70% for the former and just over 50% for the latter - so trends in the earnings distribution for Republics of the FSU can be relatively informative of trends in overall household income for these countries, see Milanovic (1998).

Russia in the 1960s.

There is now substantially more information on low incomes in the FSU than was previously available, see McAuley (1979) and Matthews (1986). Central Asian Republics tended to have lower incomes and expenditures than the overall average for USSR. Although private plot production in agriculture was permitted, this source of private income tended to be larger for those at the bottom of the distribution. Flemming and Micklewright (1999) look at inequality across an extensive list of Central and Eastern European, Baltic and FSU Republics for 1989, (their reference pg. 29, is based on a table taken from Atkinson and Micklewright (1992) and other sources). The Gini coefficient for the Kyrgyz Republic, and in fact all Central Asian Republics, in 1989 for the distribution of per capita income was 27, higher than Eastern Europe and the Baltic States by about 4 to 5 percentage points. Milanovic (1998) estimates a similar figure for 1989 but using 1993 data, the Gini coefficient for per capita income increased to 55 (a quarterly figure) while for per capita expenditure he reports a figure of 43. These figures for the distribution of expenditure are comparable with those found in this study for the Kyrgyz Republic though here 1993 and 1996 expenditure figures are compared.

3.2 Poverty in the Former Soviet Union

The eradication of poverty was seen as a distinguishing feature between socialism and capitalism, with the former supposedly concentrating more on reducing poverty than the latter. Poverty was a sensitive subject and treated in a different light to inequality and in fact those in poverty were referred to as 'maloobespechennye' or the under-provisioned. Although discussion of the subject was not encouraged, there has been a long tradition of work on subsistence minima in the USSR, though it had its drawbacks in terms of under-representation of the population concentrating on those belonging to an enterprise in urban areas. Despite this, calculations were published by Sarkisyan and Kuznetsova (1967) and many subsequent studies by other authors, including Rimashevskaia (1990), are based on their original calculations. The former authors produced subsistence minima for an urban family of four (two working adults and two children) in 1957. However there were drawbacks to using the figures as a general benchmark since they failed to incorporate the higher prices paid by collective workers, did not include medical, health expenditure

nor housing (provided by the State) costs, and allowed for only a low provision for alcohol and tobacco. Despite these caveats, a third of the population was found to fall below a cut off of 51.4 Rubles per month per capita, see Matthews (1986). As noted by Matthews, the proportion would be larger for disadvantaged workers, such as low-grade workers and the rural peasant population working in collectives.

Atkinson and Micklewright (1992) look at more recent findings. In 1989, using a 1988 poverty line, Goskomstat estimated poverty in the USSR to be 14% of the population. A national minimum of 81-88 Rubles per month per capita calculated by Goskomstat in 1989 was found to fall within the 75-100 Ruble interval of the income distribution of the USSR. Based on the lower band, the authors calculate poverty rates across the USSR using a nation-wide poverty cut off of 75 Rubles per capita per month. Taking the union as a whole, 11% of the 31 million people were found to be in poverty in 1989. The authors found significant variation across the Republics. The Baltic Republics had the lowest incidence of poverty in 1989, ranging between 1.9% in Estonia to 2.4% in Lithuania. The Republics of Belarus, Russia, Ukraine and Moldova too had relatively low levels, 3.3% in Belarus to 6% in Ukraine. Moldova had a higher level, roughly 12% similar to the Transcaucasia Republics of Georgia and Armenia. In Azerbaijan the incidence of poverty (a third of the population) was similar to those found in Central Asia, where poverty ranged from a third to over half the population. It was as much as 43.6% in Uzbekistan and over 50% in Tajikistan while the figure for the Kyrgyz Republic was 32.9%. Russia, with half the population of the Union, had slightly less than a quarter of the poor, see Table 8.4 pg. 241 in Atkinson and Micklewright (1992). The five Central Asian Republics contain just over half of the poor yet make up only 17% of the population. Though differences in prices and family sizes were not taken into consideration the figures still reflect the lower living standards, particularly in Central Asia. The authors also illustrate differences within Republics, by distinguishing collective farm households from worker/employee households with the former on a lower income.

So in general Central Asian Republics experienced greater disparity and poverty compared to other Republics in FSU, though the USSR was found to be less unequal then Western countries. Given this background we examine changes between 1993 and 1996.

4 Methodology for Welfare Measurement

Deprivation in 'income space' spans a wide range of measurement tools. The tools applied in this analysis are based on those found in Cowell (1995) and Cowell (2000), which provides a more detailed explanation of theoretical and empirical application of techniques of income distribution than is explained here.

4.1 Welfare Rankings

Comparisons of welfare between 1993 and 1996 are carried out using a carefully defined social welfare function. The function incorporates desirable properties[2] that allow distributions to be ordered with meaningful outcomes. There are several tests that can be applied to see if there has been an improvement in welfare between the years.

The first test, *first-order dominance test,* states that if the quantile functional (the proportion of total income received by a proportion of the population) of two income distributions, which in this analysis are the two years 1993 and 1996, can be unequivocally ranked it can be concluded that welfare in one year is greater than in the other year. This test often does not provide inconclusive results and a second test is applied. It is important to note that the first-order dominance test does not incorporate the principle of transfers[3]. If it is believed that this is a desirable attribute of changes in social welfare (as it is here), the second-order dominance test would also be applied.

The *second-order dominance* test is based on the distribution of cumulative income across the population proportion. The standard Lorenz curve compares relative disparities between distributions. The generalized Lorenz curve incorporates differences in the levels of income, not just dispersion, and normalizing the generalized Lorenz curve by its mean gives the standard (relative) Lorenz curve. If the generalized Lorenz curves of the two income distributions do not intersect, than it can be concluded that welfare in one year was higher than in the other. Similarly with a comparison of the standard Lorenz curves, again implications to social welfare are conclusive only if the curves do not intersect.

[2]These properties include; anonymity, population principle, principle of transfers, monotonicity, scale independence and decomposability. For details see (Cowell 2000)

[3]The principle of transfers states that a transfer from a non-poor to a poor individual improves social welfare while a transfer from a poor individual to an even poorer individual does not.

In addition to these two tests, there are the *Absolute and Relative Dominance* tests. For these tests, if the social welfare functions are limited to those that have the additional property that *proportional* increases in all incomes yield welfare improvements, then it can be concluded that one distribution dominates another if and only if there is Lorenz-dominance and the mean the dominating distribution has a higher mean than the other distribution. This would imply that the distributions did not cross for both Lorenz and generalized Lorenz dominance, with the more equal distribution having the higher mean. If in addition we have the property that uniform *absolute* increases in all incomes yield welfare improvements, then there is also Absolute Lorenz Dominance. This implies uniform absolute increases in all incomes result in welfare improvements.

An alternative to dominance-order tests are summary measures such as inequality indices which represent the degree of dispersion in a single number. This can be particularly useful when dominance tests are inconclusive.

4.2 Inequality indices

Summary measures of inequality are calculated based on the Generalized Entropy measure and the Gini coefficient. The Generalized Entropy measure is of the form;

$$I_\theta(x) = \frac{1}{\theta^2 - \theta}\left[\frac{1}{n(x)}\left\{\sum_{i=1}^{n(x)}\frac{x_i}{\mu(x)}\right\}^\theta - 1\right], \tag{1}$$

where x_i is the income for individuals $i = 1, ..n$, and θ is a parameter reflecting the aversion to inequality and can take any real value. The Generalized Entropy Measure satisfies desirable properties of the weak principle of transfers, decomposability, scale independence and the population principle. For higher positive values of θ the function is more sensitive to income differences at the top of the distribution, and for more negative values of θ the function is more sensitive to differences at the bottom of the distribution.

The Gini coefficient is a more useful measure since it is not only closely related to the Lorenz curve, (being the ratio of the area between the Lorenz Curve and the line of equality and the entire triangle defined by the line of equality) but also has a relatively easy interpretation of being the average difference in income between any two randomly chosen individuals. The Gini coefficient weights income differences about the mode of the

distribution greater and hence is not so sensitive to outliers in the tails of the distribution. The Gini coefficient is defined as;

$$Gini(x) = \frac{1}{2n(x)^2\mu(x)} \sum_{i=1}^{n(x)} \sum_{j=1}^{n(x)} |x_i - x_j|, \tag{2}$$

for individual income x_i.

Inequality measures for I_{-1}, Gini coefficient and I_2 have been calculated as they are more sensitive to the bottom, middle (mode) and top, respectively, of the distribution.

4.3 Poverty lines and indices

For this analysis, an absolute and relative approach to measuring poverty was adopted for both years. For measuring absolute poverty, a poverty line was constructed by costing a basket of goods and services that provide a minimum standard of living. Individual dietary intake, based on the survey findings, were used to find a minimum cost food basket which, in addition to achieving a required calorific level, contained a mixture of goods which adequately reflected the Kyrgyz diet. In 1993, two baskets, a low-cost and high-cost basket were developed. The former is a food basket which reflects a more austere diet and which deviates more from the current consumption pattern of low-income Kyrgyz than the high-cost (see Popkin (1994) for details). However both food baskets provide the same level of nutrients and allow for adequate growth and activity. For this analysis we use the high-cost basket because it reflects a more realistic consumption pattern. The 1993 poverty line was derived by the World Bank, see Popkin (1994), and the 1996 poverty line was calculated by the National Statistical Committee of the Kyrgyz Republic. Severe poverty was based on half the general poverty line. For 1996, only a per capita poverty line was calculated and so for purposes of comparison we use the same for 1993. Many studies, often for cross-country comparative purposes, set a U.S. dollar poverty line, for example at \$4/day/capita, see (Milanovic 1998), or \$1/day/capita. However the levels at which these poverty lines are set tend to be arbitrarily and do not necessarily reflect the cost of living in the specified country and hence for this reason we apply a relative poverty line for comparison with results using absolute poverty measures. For relative poverty, a poverty line at 50% of the median of the income distribution was used. Median rather than

Table 3: Annual Real and Relative Poverty Lines, per capita, Soms

	Absolute Poverty Lines		Relative Poverty Lines		
(deflated to Nov.'93)	Poverty line	Severe Poverty line	50% of Median Exp.	60% of Median Exp.	40% of Median Exp.
1993	1278	639	648	778	519
1996	1136	568	532	639	426

Source: KMPS 1993, NSC 1996

mean income is used since the latter can be heavily influenced by outlying observations if the distribution is highly skewed. To illustrate how sensitive poverty measures are to this cut off, we apply relative poverty lines 10% above and below this cut-off, and so include a poverty line at 60% of the median and 40% of the median, and the results for these poverty lines are presented in Appendix: Household level Welfare, on page 32. The poverty lines used are illustrated in Table 5. It can be seen from the table that all relative measures lie below the absolute poverty line (and not the severe poverty line). For 1993, 50% of the median of the distribution lies above, albeit just, the severe poverty cut-off, as does the 60% median cut-off, while 40% of the median lies below the severe poverty line. For 1996 the 60% median cut-off lies above the severe poverty line, while the 50% and 40% median cut-offs lie below the severe poverty cut-off.

We can thus expect trends in the poverty estimates, presented in section 6.3 below to reflect the relative positions of these poverty lines just described.

The focus of the analysis is individual welfare and so the data is at the individual level. For comparison, household level analysis of poverty incidences are computed and are found in Appendix: Household level Welfare, on page 32.

4.3.1 Poverty indices

To get a clear picture of the extent of poverty, it is not enough to just measure the number of people falling below the poverty line. The number of poor and the distribution of the poor below the poverty line is important. A widely used measure is the Foster, Greer, and Thorbecke (1984) measure, (FGT), defined as $P(x;z,\theta) = \frac{1}{x(n)} \sum \left(1 - \frac{x_i}{z}\right)^{\theta}$, where

$\theta \geq 0$ is the aversion to inequality and the indices have meaningful interpretations as θ is varied. For $\theta = 0$ the measure counts the number of people falling below the poverty line, often refered to as the head count measure of poverty, as described in Sen (1976); for $\theta = 1$, the measure becomes $P(x; z, \theta) = HIG(x; z)$, which takes into account the distance from the poverty line; and at higher values of θ the measure progressively weights heavier the income of those further from the poverty line. These measures are known as P_θ, and the head count and income-gap ratio are then P_0 and P_1, respectively. At $\theta = \infty$, the measure represents the Rawlsian maximum level of social justice and the well-being of the poorest person dictates the overall picture of poverty. The actual value of θ that is chosen is subjective and many empirical studies that use this measure examine how the profile of poverty changes with changing values of θ. Other than the H and HIG, the other measures are 'distribution sensitive' and may have more desirable policy implications for targeting in terms of horizontal and vertical equity. For this study we focus on P_0, P_1 and P_2.

5 Data Description

5.1 Overview of the survey

This paper uses nationally representative household survey data for the Kyrgyz Republic, called the Kyrgyzstan Multipurpose Poverty Surveys (KMPS). The surveys were sponsored by the World Bank, based on their well-established Living Standard Measurement Study (LSMS) surveys, see Grosh and Glewwe (1995) for details of the LSMS design. The Kyrgyz surveys covered approximately 2,000 households and 10,000 individuals in each year, across the 6 oblasts, Chui, Djalalabad, Issy-kul, Naryn, Osh and Talas as well as the capital, Bishkek, which is a separate administrative district in the Chui oblast. A stratified multi-stage sampling procedure was followed so that, in principle, every household had a positive probability of inclusion into the sample. Approximately two-thirds of the population live in rural areas and the survey was designed to take this into consideration with the result that the survey is nationally representative at the level of urban and rural disaggregation.

Both the Fall surveys were carried out during November-January of the respective year, just after the major harvest period. The seasonality of the survey implies that production

Table 4: Survey Sample Sizes for KPMS Fall 1993 and Fall 1996

	1993			1996		
	Total	Urban	Rural	Total	Urban	Rural
Households	1936	828	1108	1948	746	1202
%		*42.77*	*57.23*		*38.30*	*61.70*
Individuals	9547	3217	6330	8989	2862	6127
%		*33.70*	*66.30*		*31.84*	*68.16*

Source: KMPS 1993, 1996

figures for agricultural and animal husbandry will be higher than other times during the year, as will heating costs to a certain extent as the main cold season runs from November to April. The data are not panel but nationally representative cross-sections.

As is customary in the country's own survey policy, respondents were paid a nominal amount for completing the survey. The response rate for the KMPS in 1993 and 1996 were relatively high at 97% for both years. Details of the sample dimensions for the two years are presented in Table 4.

5.2 Choice of Measure

Consumption expenditure, which is taken as a proxy for permanent income, reflects income smoothing over what could be periods of fluctuations, or temporary changes, in income. A proxy for permanent income should also reflect household wealth and this is discussed later in this section. Fluctuations in income is particularly important in rural or highly agricultural economies such a found in Central Asia and in particular, the Kyrgyz Republic. Incomes are derived when the harvest or produce has been sold and depend on the weather or yield of the crop etc. Non-rural incomes can also be seasonal, e.g. tourism, construction. This can have important implications in data collection since the reference period in a survey is typically one month. Another problem is that respondents may under-report their income, for example fearing they will be reported to the tax authorities if they report un-declared income. This concerns income such as that from activities in the informal sector which can often make up a substantial part of total household income and

is particularly relevant in transition countries where certain activities before were seen as illegal and are now legal but often informal (i.e. the business is not registered). Problems of under-reporting of informal activities have been limited to some extent since specific questions referring to such activities were included in the Survey and respondents were asked to report income from a variety of activities. However this information may not reflect the unofficial payments that individuals may earn at work over and above their official salary.

Wage income and social benefits often make up a significant proportion of overall household income particularly in the FSU countries and subsequent to the start of the reforms have been subject to severe arrears, with recipients sometimes receiving payment after months (even years in some cases). Often when paid, workers may be paid in-kind, in the produce of the enterprise. Although payment is not a monetary value, workers find their own outlet for selling the goods or barter and hence in-kind payments reflect some sort of purchasing ability and need to be included. The problem of in-kind payments in Surveys has been addressed and questions pertaining to expenditure and income issues request a monetary value for any incomes or expenditures that may be in-kind. Even if income was correctly reported, fluctuations in rural incomes make expenditure a better proxy for permanent income, and an expenditure based welfare measure will be used in this analysis. Throughout the analysis household expenditure may be referred to as household 'income' but in all cases (unless explicitly stated) refers to an expenditure based measure.

The calculation of permanent income has drawbacks too. An estimation of permanent income is based on the sum of all expenditures on nondurables and durable services, and to calculate the latter needs detailed information often not collected in a household survey. For this analysis it is felt that the current consumption of non-durables is a less noisy indicator of welfare than including lumpy expenditure on durables, particularly given that such information needs to be comparable when looking across years, see Anand and Harris (1994) which examines the implications when using different proxies for welfare.

Another well-known problem with deriving household expenditure is not from intentional under-reporting by the individual (or all household members, depending on the survey design) but problems of recall. Expenditure which is infrequent, e.g. buying of clothes or household items, is difficult to estimate when information is collected some time

after purchase. Studies have shown that items bought two weeks from the survey can be hard to recall, see Deaton (1997) for a detailed analysis of problems encountered in household surveys.

A significant component of overall household expenditure is household consumption of home produced goods. This represents foregone expenditure on goods that a household would otherwise purchase. The consumption of household produced goods can often be a significant component of total household expenditure in rural areas. Consuming home produced goods is not a complete substitute for buying food in the shops, since there is time and labour spent on producing these goods that could otherwise be spent elsewhere, but by excluding this component welfare is greatly underestimated. In this analysis the consumption of home production has been included.

Next we detail the calculation of a household consumption aggregate.

5.3 Derivation of Household Expenditure

Total household aggregate expenditure figures were derived by summing expenditure for each individual to form an overall household total across the following categories[4]; food expenditure, rent and other housing expenditure, including utilities and repair and maintenance expenditure, education, health, transportation, private gifts, other expenditure including clothing, alcohol, holidays and cultural trips, and consumption of household produced goods. Values have been calculated in terms of monthly figures, or monthly averages where the time unit differed. For this analysis expenditure includes amount spent on the consumption of home production but does not include expenditure on durables, the value of livestock assets, imputed rents for home owners or savings in bank accounts. Given the construction of the household aggregate, these figures refer to the average monthly expenditures for November 1993 and caution should be shown in interpreting these figures as a proxy for permanent income.

For the calculation of welfare several observations in both 1993 and 1996 had to be dropped due to reasons of un-reliability. From the 1993 data set, 68 observations were dropped; 58 individuals with zero household expenditure and 10 individuals reported a total household expenditure of less than 1 som a month. From the 1996 data set, one

[4]Details of the 1993 data are documented in Ackland (1995)

Table 5: Annual Real Poverty Lines, per capita, Soms

(deflated to Nov.'93)	Poverty line	Severe Poverty line
1993	1278	639
1996	1136	568

Source: KMPS 1993, NSC 1996

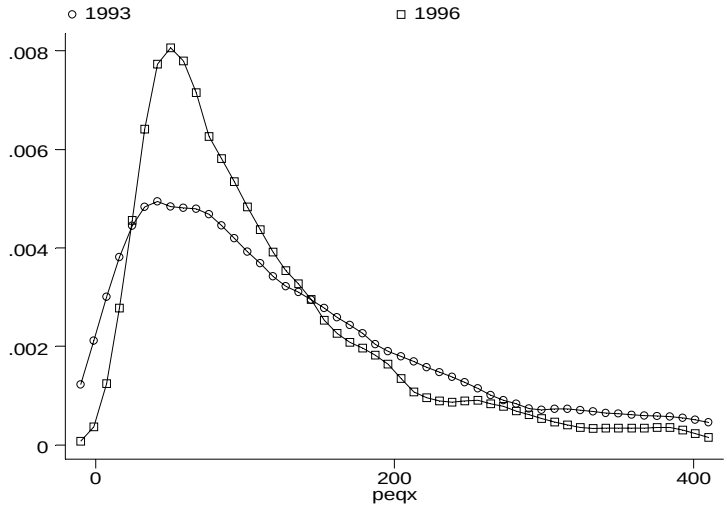
observation from the very top of the distribution was dropped. So for the calculations, the sample size for 1993 was 9,479 individuals and for 1996 was 8,988 individuals.

5.4 Poverty lines

An absolute approach to measuring poverty was adopted for both years, using a poverty line represented by the cost of a basket of goods and services that provide a minimum standard of living. Individual dietary intake, based on the survey findings, were used to find a minimum cost food basket which, in addition to achieving a required calorific level, contained a mixture of goods which adequately reflected the Kyrgyz diet. In 1993, two baskets, a low-cost and high-cost basket were developed. The former is a food basket which reflects a more austere diet and which deviates more from the current consumption pattern of low-income Kyrgyz than the high-cost (see Popkin (1994) for details). However both food baskets provide the same level of nutrients and allow for adequate growth and activity. For this analysis we use the high-cost basket because it reflects a more realistic consumption pattern. The 1993 poverty line was derived by the World Bank, see Popkin (1994), and the 1996 poverty line was calculated by the National Statistical Committee of the Kyrgyz Republic. Severe poverty was based on half the general poverty line. For 1996, only a per capita poverty line was calculated and so for purposes of comparison we use the same for 1993. The poverty lines used are illustrated in Table 5.

The focus of the analysis is individual welfare and so the data is at the individual level. For comparison household level analysis is computed for the poverty incidences and are found in Appendix: Household level Welfare on page 32. The inequality analysis was re-calculated based on a trimmed distribution, where the bottom 1% and top 1% of incomes at the top of the distribution were dropped. This was done to see how robust the results were to measurement error in the tails of the distribution, since there are strong reasons

Figure 1: Distribution of per capita expenditure, 1993 and 1996



for suspecting under-reporting at the lower (particularly given the importance of bartering and the consumption of home produced goods) and top end of the distribution and even for excluding extremely large (and possibly valid) incomes distorting the overall picture. This distribution will be referred to as the *trimmed distribution*.

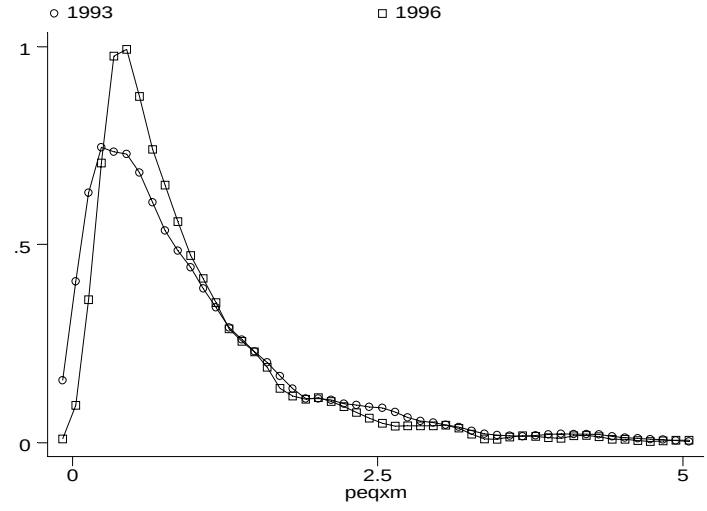
We now turn to the empirical results.

6 Empirical Results

Overview of the distribution of Income

Figure 1 illustrates the distribution of individual income in 1993 and 1996. Between the two years the income distribution has shifted to the left and there has been an increase in the population on a lower per capita income. However, the 1996 distribution cuts the 1993 from below implying a fall in the number of people on extremely low incomes. Figure 2 illustrates the distributions normalized by their respective means. It can be seen from Figure 2 that the majority of the population in both years have an income level less than the mean and a small percentage of the population on relatively high incomes.

Figure 2: Distribution of Fig.1 normalized by the mean

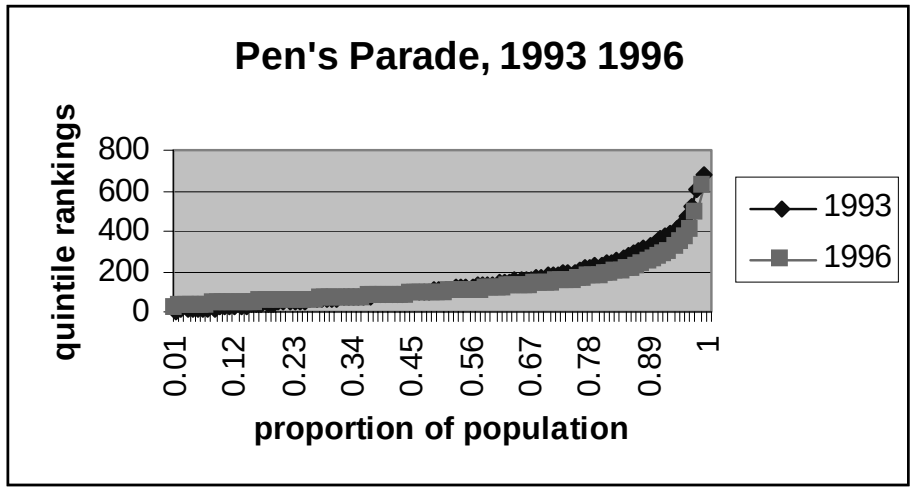


6.1 Welfare Rankings

Initially we first test for first-order dominance for the 1993 and 1996 distributions by looking at the proportion of the population against quantile rankings of income. From Figure 3, also known as the Pen's Parade, although the 1996 distribution initially dominates the 1993 the first-order dominance criteria is not satisfied as the distributions intersect at the 25th quantile. This provides no conclusive evidence concerning welfare changes and so the second-order dominance test is applied.

Second-Order dominance is based on the Lorenz and Generalized Lorenz curves. In the case of the Relative Lorenz Curve in Figure 4, the 1996 distribution is everywhere above the 1993 distribution, implying that the 1996 distribution is more equal than the 1993 distribution and hence welfare is higher in 1996. However looking at the Generalized Lorenz curves in Figure 5, the 1996 distribution lies above the 1993 distribution for approximately 70% of the population, after which the 1993 distribution dominates. The mean of the income distribution is higher in real terms in 1993 and so this distribution eventually lies above the 1996 distribution. Given these results for the Second-Order Dominance test, again it cannot be concluded that there has been an improvement in welfare (notice that since the 1993 distribution has a higher mean, we cannot apply the Absolute Lorenz dominance result). These results are robust even when the distribution is

Figure 3: First-Order Dominance: Pen's Parade



trimmed, the only change being the Generalized Lorenz curves cross at the 48th quintile rather than the 47th quintile as in Figure 5. There is no change in the Lorenz curves when the distributions are trimmed and hence the figure is not provided here. Although no conclusive evidence that welfare has improved, there has been a fall in inequality and average income has fallen.

The distributions of income and dominance tests are useful tools in examining the dispersion of the whole distribution and allows for general conclusions on how the distribution has changed between 1993 and 1996. However these movements do not provide any conclusive evidence that welfare has improved or fallen over this short period, so we next turn to summary measures.

Percentile ratios provide summary information about the relative differences in the distribution. From the results in Table 6 it can be seen that the disparity in income between the top 10th and bottom 10th decile has lessened between the three years. This implies either a fall in income at the top decile or a significant increase of individuals with income in the bottom $10th$ decile in 1996. An increase in the percentile ratio between the 10th and the median, and 25th and the median, compared to 1993, indicates either a fall in mean income or an increase in the income levels of the 25th and 10th deciles. Evidence from the density distribution suggests that there has been an increase in the proportion

Figure 4: Second-Order Dominance: Relative Lorenz Curve

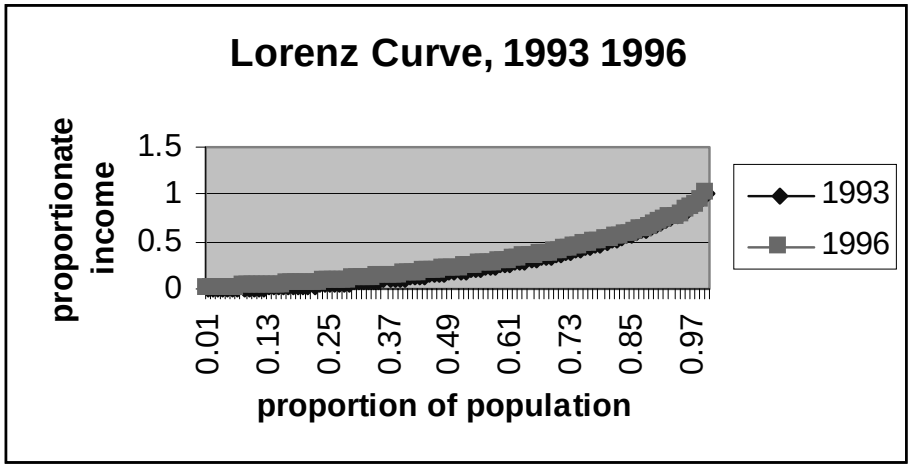


Figure 5: Second-Order Dominance: Generalized Lorenz Curve

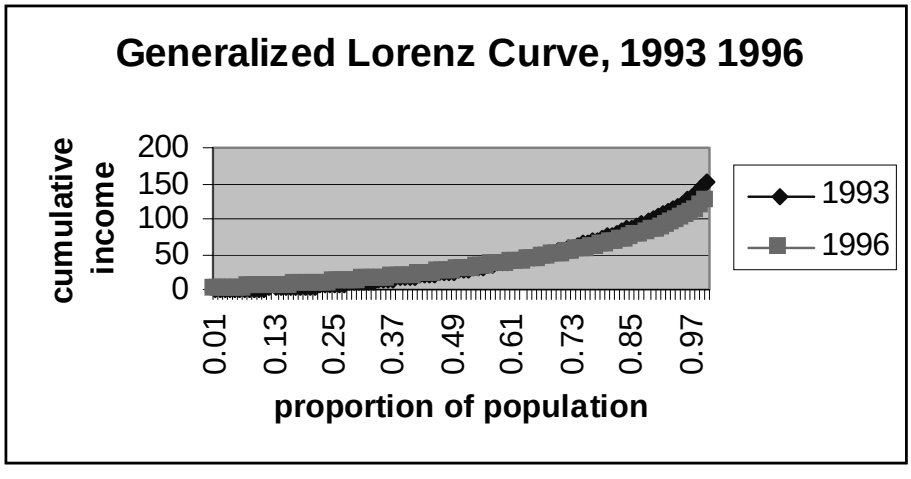


Table 6: Percentile Ratios, 1993 and 1996

	$p\frac{90}{10}$	$p\frac{10}{50}$	$p\frac{25}{50}$
1993	15.22	0.21	0.51
(s.e.)	(0.450)	(0.005)	(0.010)
1996	7.49	0.38	0.59
(s.e.)	(0.140)	(0.006)	(0.007)

Source: Authors own calculations based on KMPS 1993, 1996

Table 7: Percentile Ratios using trimmed distribution

	$p\frac{90}{10}$	$p\frac{10}{50}$	$p\frac{25}{50}$
1993	14.08	0.22	0.52
(s.e.)	(0.941)	(0.014)	(0.015)
1996	7.02	0.39	0.59
(s.e.)	(0.096)	(0.006)	(0.007)

Source: Authors calculations based on KMPS 1993, 1996

of the population on lower incomes, and thus also a fall in mean income, or $50th$ decile. The results are robust to the trimmed distribution, as illustrated in Table 7, with little significant change in the $p\frac{90}{10}$ ratios.

6.2 Inequality Measurement

The distribution is broken down into urban and rural populations since living standards tend to be very different between the two areas, with two-thirds of the population living in the generally less developed rural areas.

It can be seen from Table 8 that there has been a fall in I_{-1} and in the Gini coefficient, reflecting a narrowing of income differences in the bottom and near the mode of the distribution. There has been a significant decline in disparity in rural areas at the lower end of the distribution, with I_{-1} falling to 0.42 from 2.08 in rural areas. Differences at the top of the distribution have increased, reflected in a higher I_2 in 1996, increasing from 0.46 to 0.55 in 1996 for the whole population. This result is *not* robust to trimming in the top tail of the distribution (unlike the result for the percentile ratio $p\frac{90}{10}$ which is robust to

Table 8: Inequality Indices, 1993 and 1996

	I_{-1}		Gini		I_2	
	1993	1996	1993	1996	1993	1996
Total population	1.83	0.44	0.47	0.44	0.46	0.55
(s.e)	(0.121)	(0.005)	(0.003)	(0.007)	(0.011)	(0.540)
Urban	0.72	0.40	0.43	0.40	0.38	0.49
(s.e)	(0.054)	(0.021)	(0.004)	(0.008)	(0.015)	(0.069)
Rural	2.08	0.42	0.48	0.44	0.46	0.53
(s.e)	(0.159)	(0.021)	(0.003)	(0.011)	(0.009)	(1.006)

Source: Author's calculations based on KMPS 1993, 1996

Table 9: Inequality Indicies using trimmed distribution

	I_{-1}		Gini		I_2	
	1993	1996	1993	1996	1993	1996
Total population	0.86	0.35	0.46	0.41	0.40	0.27
(s.e)	(0.050)	(0.006)	(0.006)	(0.003)	(0.003)	(0.007)
Urban	0.66	0.29	0.41	0.36	0.29	0.25
(s.e)	(0.062)	(0.009)	(0.008)	(0.005)	(0.014)	(0.008)
Rural	0.93	0.34	0.47	0.41	0.43	0.39
(s.e)	(0.064)	(0.007)	(0.020)	(0.003)	(0.020)	(0.010)

Source: Author's calculations based on KMPS 1993, 1996

trimming in the distribution and again shows an increase in disparity in the distribution between 1993 and 1996). The indices for the trimmed distribution are presented in Table 9. The I_2 measure in fact shows a decrease in 1996, when the top 1% of incomes are dropped. This suggests that there are a few particularly high incomes in the top tail. However, all other results are consistent with the 1996 indices being lower than in 1993. For all cases, in both the full and trimmed distributions, rural inequality remains higher than urban inequality.

The results of the inequality indices show that inequality has decreased over 1993 and 1996, with even a relatively significant fall in mean income. There appears to be a highly

skewed distribution in 1996, with individuals at the very top 1% of the distribution having a much higher income than incomes up to the 98 percentile. With such disparity at the top of the distribution focusing on one index such as the I_2 could be misleading. It is noted that incomes at the very bottom of the distribution, particularly for those individuals near, or at, subsistence living, are subject to problems of measurement error. The unreliability of the incomes at the lower tail can be seen by the relatively large standard errors for 1993 for I_{-1}, especially for rural areas. However dropping observations that seem unreliable at the lower tail can alter the result and hence the results are not robust to trimming at the bottom of the distribution.

6.3 Poverty Measurement

This section focuses on the depth of poverty. The population is decomposed into urban and rural areas as well as by oblast, as this level of poverty analysis is more informative when examining aspects of poverty.

From Table 10 it can be seen that the incidence of poverty has increased slightly between 1993 and 1996 with the head count rate, P_0, increasing from 49% to 52% of the population. The head count figures for 1993, are on average four percentage points higher than those found in Ackland and Falkingham (1996), with the trend for urban and rural being the same. The values for P_2 fall substantially for both years. This implies that the proportion of individuals nearer the poverty line are greater than those near the very bottom of the income distribution and hence the extent of the deprivation is less in 1996. There has been only a marginal increase in urban poverty, with a higher increase of 4 percentage points in rural areas. However, the incidence of severe poverty has fallen by 4% for the population as a whole and in both urban and rural areas. Interestingly the fall in severe poverty has been greater in rural areas. This may be due to economic improvements in the economy by 1996 (wage arrears were significantly lower in 1996 compared to 1993, see (Namazie 2001c)) as well as households being able to cope better with the new environment. Except for the head count measures, for higher values of θ (higher θ reflects increasing weight of incomes further away from the poverty line, hence those worse off) the poverty measures have fallen. The poverty indices have decreased

Table 10: Poverty Measures (per capita), 1993 and 1996

	P_0		P_1		P_2	
	Poor	Very Poor	Poor	Very Poor	Poor	Very Poor
			1993			
Total Pop.	0.49	0.24	0.24	0.12	0.16	0.08
(s.e)	(0.005)	(0.004)	(0.003)	(0.003)	(0.003)	(0.002)
Urban	0.33	0.13	0.14	0.05	0.08	0.03
(s.e)	(0.008)	(0.006)	(0.004)	(0.003)	(0.003)	(0.002)
Rural	0.57	0.30	0.30	0.15	0.20	0.10
(s.e)	(0.006)	(0.006)	(0.004)	(0.004)	(0.004)	(0.003)
			1996			
Total Pop.	0.52	0.20	0.22	0.06	0.12	0.03
(s.e)	(0.005)	(0.004)	(0.003)	(0.002)	(0.002)	(0.001)
Urban	0.34	0.09	0.12	0.03	0.06	0.01
(s.e)	(0.009)	(0.005)	(0.004)	(0.002)	(0.003)	(0.001)
Rural	0.61	0.25	0.27	0.07	0.15	0.03
(s.e)	(0.006)	(0.006)	(0.003)	(0.002)	(0.002)	(0.001)

Source: Author's own calculations based on KMPS 1993, 1996

relatively more in rural compared to urban areas, though the absolute values are higher for rural areas across all values of θ.

Differences across oblast were quite varied. In 1993 there were only a few percentage point differences in poverty incidences across oblasts, except for Issy-kul and Djlala-abad where differences were as much as 4% and 7% lower, respectively. In 1996 the differences were much larger, ranging from 3% to 8% across all oblasts except Bishkek (which did not change), for P_1. Larger family sizes particularly for families at the bottom of the 'income' distribution imply a greater proportion of people than households in poverty. The figures for poverty incidence at the household level are a couple of percentage points lower than the per capita figures, 43% in 1993 and 45% in 1996. This is expected due to the relatively large household sizes which averaged 4.9 persons in 1993 and 4.6 persons in 1996, see Table 13, Table 14 and Table 15 for the breakdown of poverty incidences at the household level,

Table 11: Poverty Measures (per capita) by Oblast, 1993

	1993					
	P_0		P_1		P_2	
	Poor	Very Poor	Poor	Very Poor	Poor	Very Poor
North						
Bishkek	0.22	0.06	0.08	0.02	0.04	0.01
(s.e.)	(0.014)	(0.007)	(0.006)	(0.003)	(0.004)	(0.002)
Chu	0.38	0.15	0.17	0.06	0.10	0.04
(s.e.)	(0.012)	(0.008)	(0.007)	(0.005)	(0.005)	(0.004)
Issykul	0.54	0.31	0.29	0.16	0.20	0.11
(s.e.)	(0.016)	(0.015)	(0.011)	(0.009)	(0.010)	(0.008)
Naryn	0.64	0.39	0.37	0.19	0.25	0.11
(s.e.)	(0.026)	(0.023)	(0.016)	(0.013)	(0.013)	(0.009)
Talas	0.47	0.23	0.23	0.12	0.16	0.08
(s.e)	(0.023)	(0.020)	(0.015)	(0.012)	(0.012)	(0.009)
South						
Djalabad	0.59	0.34	0.33	0.16	0.22	0.10
(s.e.)	(0.013)	(0.013)	(0.009)	(0.007)	(0.008)	(0.005)
Osh	0.55	0.27	0.28	0.14	0.18	0.09
(s.e.)	(0.009)	(0.008)	(0.006)	(0.005)	(0.005)	(0.004)

Source: Author's own calculations based on KMPS 1993, 1996

in Appendix 8 on page 32. This shows how different the picture of poverty can be when not accounting for differences in household size.

Tables 11 and 12 present poverty rates across oblasts. Looking at figures for 1993, poverty rates are quite high in 1993 across all oblasts except Chui and Bishkek, although Chui had a rate much higher than Bishkek at 38% compared to 22% of the population. For the rest of the country the figures were quite high ranging from 47% for Talas, to 64% for Naryn. From Table 12, in 1996 poverty actually fell in Chu but increased across all other oblasts except Bishkek, which remained constant between the two years. Poverty increased from 64% to 71% in Naryn, in the North, while in the South both Djalabad and Osh experienced an increase in poverty from 59% and 55% respectively to 66% in each oblast. Osh is the second largest city in the Kyrgyz Republic and highly urban,

Table 12: Poverty Measures (per capita) by Oblast, 1996

	1996					
	P_0		P_1		P_2	
	Poor	Very Poor	Poor	Very Poor	Poor	Very Poor
North						
Bishkek	0.22	0.04	0.07	0.02	0.03	0.01
(s.e.)	(0.011)	(0.006)	(0.005)	(0.002)	(0.003)	(0.001)
Chu	0.31	0.10	0.12	0.02	0.06	0.01
(s.e.)	(0.012)	(0.008)	(0.005)	(0.002)	(0.003)	(0.001)
Issykul	0.56	0.18	0.22	0.05	0.11	0.02
(s.e.)	(0.016)	(0.013)	(0.009)	(0.004)	(0.006)	(0.002)
Naryn	0.71	0.29	0.31	0.09	0.18	0.04
(s.e.)	(0.019)	(0.019)	(0.011)	(0.008)	(0.008)	(0.005)
Talas	0.52	0.26	0.21	0.07	0.12	0.02
(s.e)	(0.025)	(0.021)	(0.013)	(0.006)	(0.009)	(0.003)
South						
Djalabad	0.66	0.28	0.29	0.09	0.16	0.04
(s.e.)	(0.013)	(0.012)	(0.007)	(0.005)	(0.005)	(0.003)
Osh	0.66	0.26	0.29	0.09	0.16	0.04
(s.e.)	(0.008)	(0.008)	(0.005)	(0.003)	(0.004)	(0.002)

Source: Author's own calculations based on KMPS 1996

illustrating that not only rural areas experienced increases in poverty. Interestingly in all oblasts except Talas, there was a fall in severe poverty compared to levels in 1993, the falls ranged from 6% of the population in Bishkek to as much as 34% in Djalabad and 37% in Naryn. For P_1 and P_2 the trends are the same, but the absolute values decrease with increasing θ. Also the fall in rates for those experiencing severe poverty suggest that although there has be a higher proportion of individuals falling into poverty, the numbers falling to much lower levels of income has decreased.

7 Conclusion

This paper presented aspects of welfare to see what impact the reform had over the relatively short period 1993-1996 on the population of the Kyrgyz Republic. The main finding is that there is no conclusive evidence that welfare has increased over this period, since although there has been a decrease in inequality in the income (consumption expenditure) distribution average income has fallen. The fall in income has lead to an increase in the incidence of poverty though severe poverty rates have fallen. This suggests that more people are being pushed into poverty and those at the bottom of the distribution have not experienced a fall in living standards.

Average income has fallen across the population but appears to have increased for those at the very bottom of the distribution. Inequality has fallen over the period, even in urban and rural areas, but using a measure that focuses on the bottom tail of the distribution, inequality has increased. This result is not robust to trimming of the top and bottom 1% of the income distribution, with inequality decreasing for all measures, in urban and rural areas. The fall in inequality in rural areas is much smaller using a trimmed distribution and illustrates how data at the top and bottom of the distribution can alter the picture. Large expenditures at the top of the distribution can well be valid particularly since there were improvements in the economy in 1996. The reduction in inequality at the lower end of the distribution is a reflection of how difficult it can be to calculate expenditure, particularly in a rural economy, where a large source of consumption is based on home produced goods which are difficult to price. Also in 1993 inflation was over 1000% at the end of the year and wage arrears effected almost 60% of workers falling to around 24% in 1996, see Namazie (2001b).

Although poverty has increased over this period from 49% to 52%, there has been a fall in severe poverty, again seen in the fall in mean income across the population but accompanied by a shift to the right of the income distribution. Measures show that the rural population is poorer in both years than the urban population. Interestingly, a breakdown of poverty incidences by oblast show that the urban city of Osh has the highest incidence of poverty, followed by other rural oblasts of Naryn, Talas and Djalabad.

This paper has also illustrated the importance of looking at inequality and poverty measures that are distribution sensitive to get a clearer picture of how the distribution of income has changed. It also highlights how outliers in the tails of the distribution can alter results and the importance of examining how robust results are to potential measurement error. So although over the period the transition process may have lead to an increase in those poor, those already poor were not made worse of and this is comparable to results in other studies on the Kyrgyz Republic, that the worst effects of the transition process are over. Nevertheless panel data would be needed to be able to conclude to what extent poverty has been chronic or transient, and for which groups of the population.

When more data becomes available future research could be carried out to assess how robust these findings are to changes in the poverty line as well as seeing how trends in inequality and poverty change across the years. The findings presented here are greatly affected by the labour market since labour market activity has such an impact on household and individual income. The affect of reform on the labour market, both in terms of labour demand and labour supply considerations, are discussed in Namazie (2001d), Namazie (2001c) and Namazie (2001a). Drawbacks to measures of welfare in such as rural economy in the light of hyperinflation, wage arrears and prevalence of bartering have been mentioned and Namazie and Sanfey (2001) examines well-being based on a non-monetary measure of welfare to see if a subjective measure of welfare offers information complementary to conventional monetary based measures.

8 Appendix: Household level welfare

Poverty rates at the Household Level

Table 13: Poverty Measures (household level), 1993 and 1996

	P_0		P_1		P_2	
	Poor	Very Poor	Poor	Very Poor	Poor	Very Poor
			1993			
Total Pop.	0.43	0.21	0.21	0.10	0.14	0.06
(s.e.)	(0.011)	(0.009)	(0.007)	(0.009)	(0.005)	(0.005)
Urban	0.31	0.12	0.13	0.05	0.07	0.03
(s.e.)	(0.016)	(0.012)	(0.008)	(0.006)	(0.006)	(0.004)
Rural	0.53	0.28	0.28	0.14	0.19	0.09
(s.e.)	(0.016)	(0.015)	(0.010)	(0.009)	(0.009)	(0.007)
			1996			
Total Pop.	0.45	0.16	0.18	0.05	0.09	0.02
(s.e.)	(0.012)	(0.008)	(0.006)	(0.003)	(0.004)	(0.002)
Urban	0.28	0.07	0.10	0.02	0.05	0.01
(s.e.)	(0.017)	(0.009)	(0.007)	(0.004)	(0.004)	(0.002)
Rural	0.55	0.21	0.23	0.06	0.13	0.03
(s.e.)	(0.014)	(0.012)	(0.007)	(0.005)	(0.005)	(0.003)

Source: Author's own calculations based on KMPS 1993, 1996

Table 14: Poverty Measures (household level) by Oblasts, 1993

	1993					
	P_0		P_1		P_2	
	Poor	Very Poor	Poor	Very Poor	Poor	Very Poor
North						
Bishkek	0.21	0.08	0.09	0.03	0.05	0.02
(s.e.)	(0.022)	(0.015)	(0.012)	(0.008)	(0.008)	(0.006)
Chu	0.37	0.15	0.17	0.07	0.10	0.05
(s.e.)	(0.022)	(0.017)	(0.013)	(0.009)	(0.010)	(0.007)
Issykul	0.50	0.29	0.26	0.14	0.18	0.10
(s.e.)	(0.036)	(0.032)	(0.025)	(0.021)	(0.021)	(0.017)
Naryn	0.62	0.36	0.35	0.17	0.23	0.11
(s.e.)	(0.054)	(0.052)	(0.036)	(0.028)	(0.030)	(0.021)
Talas	0.46	0.21	0.22	0.11	0.14	0.07
(s.e.)	(0.052)	(0.040)	(0.033)	(0.025)	(0.027)	(0.018)
South						
Djalabad	0.52	0.29	0.28	0.13	0.18	0.08
(s.e.)	(0.034)	(0.032)	(0.022)	(0.017)	(0.017)	(0.012)
Osh	0.53	0.25	0.26	0.13	0.17	0.09
(s.e.)	(0.022)	(0.020)	(0.015)	(0.012)	(0.012)	(0.009)

Source: Author's own calculations based on KMPS 1993

Table 15: Poverty Measures (household level) by Oblasts, 1996

	1996					
	P_0		P_1		P_2	
	Poor	Very Poor	Poor	Very Poor	Poor	Very Poor
North						
Bishkek	0.20	0.03	0.06	0.01	0.03	0.004
(s.e.)	(0.021)	(0.009)	(0.008)	(0.003)	(0.004)	(0.001)
Chu	0.27	0.07	0.09	0.02	0.04	0.005
(s.e.)	(0.023)	(0.013)	(0.009)	(0.004)	(0.005)	(0.002)
Issykul	0.48	0.14	0.18	0.04	0.09	0.01
(s.e.)	(0.037)	(0.025)	(0.017)	(0.008)	(0.011)	(0.004)
Naryn	0.65	0.26	0.28	0.08	0.15	0.04
(s.e.)	(0.044)	(0.040)	(0.026)	(0.016)	(0.019)	(0.010)
Talas	0.45	0.21	0.18	0.05	0.10	0.02
(s.e.)	(0.056)	(0.045)	(0.029)	(0.014)	(0.018)	(0.006)
South						
Djalabad	0.58	0.25	0.25	0.07	0.14	0.03
(s.e.)	(0.031)	(0.025)	(0.017)	(0.010)	(0.011)	(0.006)
Osh	0.63	0.24	0.27	0.08	0.15	0.04
(s.e.)	(0.021)	(0.018)	(0.012)	(0.007)	(0.009)	(0.004)

Source: Author's own calculations based on KMPS 1996

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